



Enhancing Early Childhood Creativity Through Augmented Reality-Assisted Drawing Pattern Development at Nurul Qolbi Kindergarten

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Abstract

Developing creativity in early childhood is very important because early childhood is a golden period in the growth and development of children. However, the results of observations at Nurul Qolbi Kindergarten show that children's creativity is still less than optimal due to monotonous learning and minimal use of innovative learning media. This study aims to improve the creativity of early childhood through the development of drawing patterns with the help of Augmented Reality (AR) technology at Nurul Qolbi Kindergarten. This Classroom Action Research was conducted on children aged 4-5 years for two cycles with the Kurt Lewin model. Data were collected using observation, documentation and assessment techniques of children's work. Data analysis was carried out by data reduction, data presentation and drawing conclusions. The results of the study showed that before the application of AR, children's creativity was relatively low. However, after the application of AR-assisted drawing pattern development learning, there was an increase in children's creativity, both in original ability, fluency, flexibility, and elaboration of ideas. It was concluded that the use of Augmented Reality (AR)-assisted drawing pattern development can improve the creativity of early childhood. It is recommended that educators can utilize this technology-based learning media to create a more innovative and interactive learning experience.

Keywords: *Creativity, Image Pattern, Augmented Reality.*

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INTRODUCTION

Creativity is one of the important aspects in early childhood development, because creativity plays an important role in shaping innovative and imaginative thinking skills, as well as problem-solving skills. According to Gusmani (2024), creativity in early childhood is defined as the ability to express ideas and inspiration through drawing activities, which support children in channeling their imagination, ideas, and feelings more freely and confidently. Early childhood is known as the golden period when children's brain development and basic abilities develop rapidly. Creativity is part of development that not only supports artistic aspects but also influences children's ability to think critically, solve problems, and build their confidence and initiative from an early age (Irna, 2024). Meanwhile, Guilford (1967) explains that creativity is part of intelligence that involves divergent thinking, which is the ability to generate various possible solutions to a problem. This thinking includes fluency, flexibility, originality, and elaboration. Therefore, early childhood requires appropriate stimulation to optimize their creative potential.

Based on Permendikbudristek Number 5 of 2022 concerning Early Childhood Education Graduate Competency Standards, one of the developmental achievements of early childhood is the ability to have imagination and creativity. This is realized through exploration and expression of their thoughts and feelings in the form of simple actions or works produced by utilizing cognitive, affective, artistic, and fine and gross motor skills. Meanwhile, according to Wallas's theory (1926), creativity consists of four interrelated processes that occur in sequence. The first stage is Preparation, in which individuals gather information and understand the problems they face as a basis for creative thinking. Next, the process continues to the second stage, Incubation, which is the stage when the ideas that have been gathered are processed unconsciously without intensive focus. The next stage is Illumination, where new insights or ideas suddenly emerge as a result of the previous process. In the final stage, Verification, the ideas found are tested, developed, and refined so that they can be applied as real solutions. Thus, Wallas' theory explains that creativity is not an instant result, but a structured and gradual thinking process that requires time and deep reflection.

One effective medium for developing creativity in early childhood is through drawing activities, particularly the development of drawing patterns. Drawing activities not only train fine motor skills, but also stimulate children's imagination and self-expression visually. According to research conducted by (Intan Kamala, 2023), drawing activities have been proven to significantly increase creativity in early childhood, as they give children the freedom to express their ideas, imagination, and feelings without restrictions, thereby stimulating their creativity. Through free drawing, children are more courageous in exploring, creating unique pictures based on their experiences and imagination, and more confident in choosing colors and shapes without being fixated on existing patterns. This statement is reinforced by the opinion of Risqa Oktarina (2024), who states that the implementation of free drawing activities provides space for children to express their imagination freely, which ultimately increases their creativity. From these activities, children also demonstrate good skills in using tools and expressing their ideas through drawing.

According to Lowenfeld (1982), children's drawing development goes through several stages, starting from the scribbling stage at the age of 2-4 years, the preschematic stage at the age of 4-7 years, to the schematic stage at the age of 7-9 years. Each stage shows an increase in

children's ability to recognize shapes, space, and symbols, which form the basis for the development of drawing patterns. Furthermore, Safuan (2013) emphasizes that the development of drawing patterns in early childhood can increase creativity as well as eye-hand coordination skills. Through appropriate stimulation, children can develop more varied and original drawing patterns, thereby increasing their confidence and courage to explore. In addition, the use of assistive technology such as Augmented Reality (AR) can make learning activities more interesting. As explained by (Dera Puspawati, 2022), the use of augmented reality technology has been proven effective in developing children's creativity. This technology is capable of sparking imagination, increasing enthusiasm for learning, and encouraging flexible thinking through immersive visual media. In addition to having a positive impact on the development of children's creativity, augmented reality can also provide significant benefits for teachers in improving their understanding of the application of technology in learning. This was also conveyed by (Nurliana Nasution, 2022), who stated that the use of augmented reality media not only attracts children's attention but also increases teachers' understanding of the use of technology in learning.

However, observations at Nurul Qolbi Kindergarten show that children's creativity is still not optimal. Children tend to imitate existing patterns without daring to develop new variations or innovations. This is due to a lack of interesting and innovative learning media and learning methods that are not varied enough. Based on these issues, this study aims to develop the creativity of early childhood through pattern development activities assisted by Augmented Reality (AR). It is hoped that with the right learning approach, children can express their ideas and imagination freely and creatively, so that their creativity skills can increase significantly.

RESEARCH METHOD

This study uses a qualitative approach with classroom action research. Classroom action research refers to research conducted in the classroom to investigate the meaning of actions applied to classroom-based research topics. According to Arifin (2021), Classroom Action Research (CAR) is a research method carried out by teachers in their own classrooms in a systematic and reflective manner, with the aim of improving the learning process and increasing student learning outcomes through certain actions that are designed, implemented, and evaluated in cycles. Furthermore, Aiyub Azhari (2025) states that classroom action research is a strategic tool for teachers to improve their teaching competence through a continuous reflective cycle, especially in creating more interactive and participatory learning.

The research data was collected from the pre-action conditions and the entire series of Classroom Action Research processes, which included the planning, implementation, observation, and reflection stages carried out in Cycle I and Cycle II. The description of the results and discussion in this article focuses on improving children's creativity, which is limited to four main indicators, namely: fluency, flexibility, originality, and elaboration. Data related to these indicators were obtained through observation techniques, assessment of children's work, and documentation. The subjects of this study were students in Group A at Nurul Qolbi Kindergarten, located at Jl. Karyabakti Kedung Krisik Utara, Argasunya Village, Harjamukti District, Cirebon City. There were 20 subjects in this study, consisting of 6 boys and 12 girls.

RESULTS AND DISCUSSION

The research data was collected from pre-action conditions and the entire series of Classroom Action Research, which included the planning, implementation, observation, and reflection stages carried out in Cycle I and Cycle II. The description of the results and discussion in this article then focused on the description of data on the improvement of children's creativity, which was limited to the indicators of fluency, flexibility, originality, and elaboration, which were obtained through observation techniques, children's work, and documentation.

The pre-cycle activity was conducted on August 4, 2025, with a free drawing activity. In this pre-cycle activity, the children drew according to their imagination and desires without much stimulation from the teacher. Based on the results obtained in this pre-cycle activity, the percentage of children's creativity included fluency, which had an average score of 2.05 or 51.25% (fairly good), flexibility obtained an average score of 2.05 or 51.25% (fairly good), originality obtained an average score of 2.05 or 51.25% (fairly good), while elaboration obtained a score of 2.1 or 50%. This means that in this pre-cycle, it is categorized as still developing or fairly good and has not yet reached the category of very good or excellent from the value set by the researcher, which is 80%. The following is a bar chart of the creativity abilities of children in group A at Nurul Qolbi Kindergarten in Cirebon City.

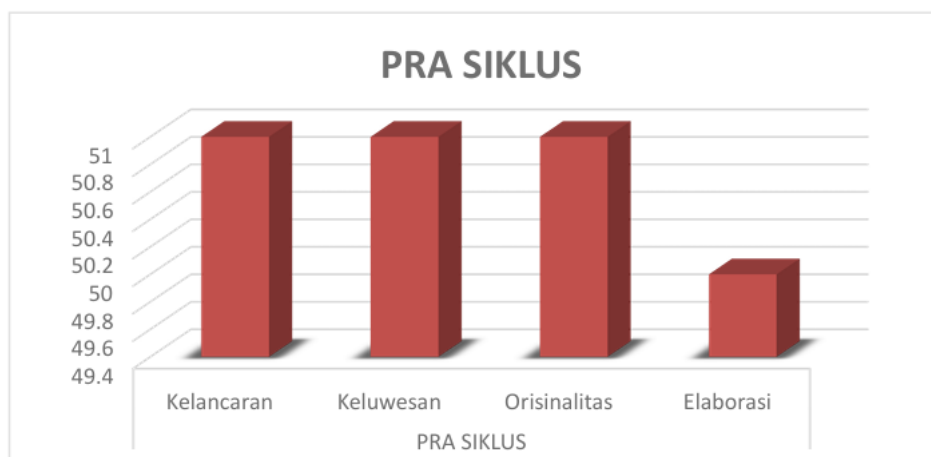


Figure 1. Pre-cycle Children's Creativity Skills

Considering the above conditions regarding the children's creativity levels, classroom action research was conducted by providing activities using pattern development to improve the creativity of children in group A at Nurul Qolbi Kindergarten. The pattern development method was used because, based on the pre-cycle results, the children's creativity was still quite good but had not reached the target category of 80%. Therefore, a more structured and stimulating learning approach was needed to encourage children to be more active in exploring and developing their creative ideas through pattern drawing. Pattern drawing was chosen because this activity can train fine motor skills, enhance imagination, and provide space for children to express their creativity freely but in a focused manner.

Classroom Action Research is designed with reference to Kurt Lewin's model, which in one cycle includes the following steps: Planning, Action, Observation, and Reflection. The children's creativity sheets used in cycle I can be seen in the table below:

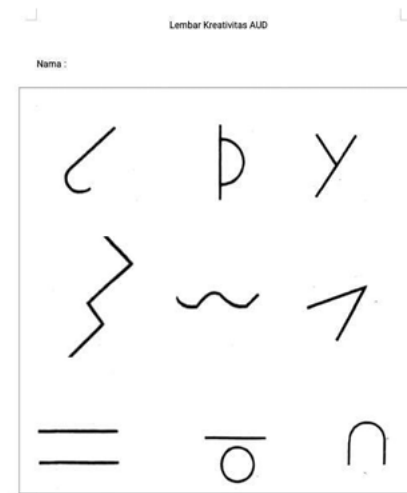


Figure 2. Children's Creativity Sheet Cycle I

Cycle I activities were carried out on August 13, 2025. These activities began with the preparation of a Lesson Plan (RPPH) which included several activities, among others: telling stories about objects that can be made using patterns, such as circles, developing children's creativity in producing drawings based on the patterns provided, expressing children's imagination visually through the drawings they made, presenting their work in front of their friends, and identifying and integrating various basic shapes into meaningful visual representations. The implementation of the action included three activities, namely the initial activity, the core activity, and the final or closing activity. In the initial activity, the teacher opens the lesson with a greeting, prayer, and ice breaking to create a pleasant atmosphere and motivate the children, accompanied by a short story and stimulating questions to spark the children's creativity. This activity lasts for 45 minutes, during which the teacher gives the children paper or worksheets containing basic patterns to observe and develop into pictures according to their imagination, with guidance and motivation from the teacher.

After drawing, the children were asked to present their work in front of their friends in turn, and the teacher praised them for their courage and work. At the end of the activity, the teacher summarized the lesson, invited the children to reflect on their experiences, praised them, and tidied up the tools and materials that had been used, before ending the lesson with a prayer together. Based on the observations and the children's work, data on the level of creativity of children after the pattern development activity without the help of augmented reality was obtained: from the fluency indicator, the average score was 2.05 or 51.25% (fairly good), from the flexibility indicator, the average score was 2.05 or 51.25% (fairly good), originality obtained an average score of 2.15 or 53.75% (fairly good), and elaboration obtained an average score of 2.1 or 52.5 (fairly good). It can be concluded that the children's creativity level in cycle I is still at a fairly good level, although there has been an improvement compared to the pre-cycle condition, as shown in the diagram below:

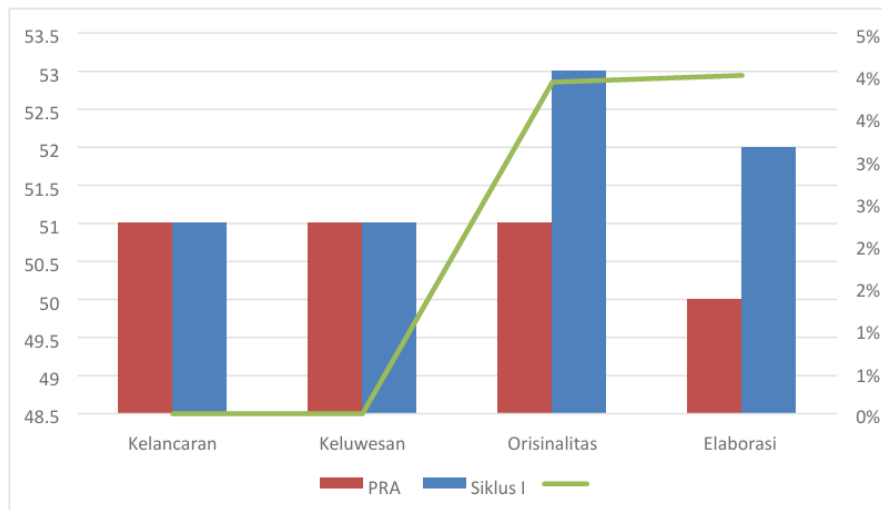
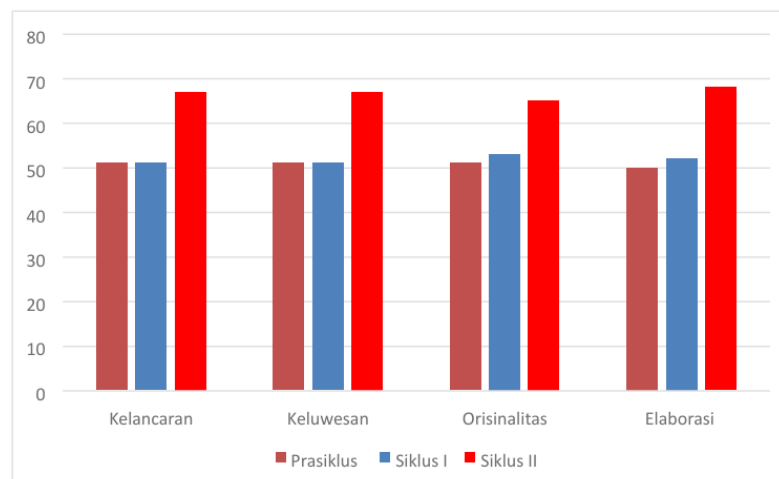


Figure 3. Comparison of Pre-Cycle and Cycle I Creativity Abilities

Based on the above observations, it is believed that the children's creativity skills are not yet satisfactory. In the reflection stage of cycle I, it was acknowledged that there were several issues that needed attention, such as the duration of the opening activities, particularly the ice-breaking activities, which took too long, thereby reducing the time allocated for the main activities. As a result, a number of children rushed through the drawing activities, resulting in suboptimal work. In addition, some children tended to imitate their friends' drawings, which shows that their originality has not yet fully developed independently and that their enthusiasm for this activity is still lacking.



Gambar 4. Perbandingan Kemampuan Kreativitas Prasiklus, Siklus I dan Siklus II

Based on the reflection of cycle I learning, it was concluded that Classroom Action Research needed to be continued to cycle II with several improvements. The improvements to be made included simplifying the opening activities by reducing the duration of ice breaking so that the time for the core drawing activities would be more optimal. Teachers also utilized digital technology with the help of augmented reality so that children would be more motivated to participate in the activities. The teacher will also provide examples of drawings from more

varied and exploratory basic patterns in order to foster children's originality and avoid the tendency to imitate their friends' work. In addition, the teacher will show audiovisual media such as relevant learning videos to increase children's motivation to explore creative forms according to their styles and imaginations as outlined in the RPPH.

The implementation of the improved RPPH for cycle II also went through the stages of planning, action, observation, and reflection. Cycle II activities were carried out on May 9, 2025. The results of cycle II showed that children's creativity in terms of fluency scored an average of 2.7 or 67.5% (Good), flexibility obtained an average score of 2.7 or 67.5% (Good), originality obtained an average score of 2.6 or 65% (Good), and elaboration obtained an average score of 2.75 or 68.75% (Good). These data show that the children's creativity skills are already classified as good, with elaboration even achieving the highest percentage. There was an increase in each indicator of the children's creativity skills, as shown in the bar chart below. Based on this, at the reflection stage, the researcher concluded that the study did not need to be continued to the next cycle.



Figure 5. Development of Cycle 2 Pattern with Augmented Reality Application (Quiver)

CONCLUSION

Considering the research reflections in Cycle I and the results in Cycle II, it appears that improving creativity in early childhood requires adequate and continuous guidance. This is in line with Irna's (2024) view, which emphasizes that early childhood creativity develops optimally through appropriate stimulation, emotional support, and a learning environment that encourages exploration. In this context, the role of teachers is very important as facilitators who provide consistent direction and motivation.

In the pre-action stage, children's creativity skills were still in the "fairly good" category, with an average percentage score of 51.25%. After the action was carried out in Cycle I using the method of developing picture patterns without the aid of technology, there was a slight increase but it was not yet significant. In Cycle I, limitations in providing guidance and time efficiency meant that the results of the pattern development activity did not reach the optimal category. This was due to several obstacles in the learning activities, such as the less than optimal duration of learning and a lack of variety in learning stimulation.

In Cycle II, after improvements were made in the form of simplifying opening activities, increasing the variety of guidance and learning strategies, and utilizing Augmented Reality (AR) technology as a tool, there was a significant increase in all creativity indicators. The average score for each indicator in Cycle II increased to more than 65%, with elaboration

reaching the highest score of 68.75%. This shows that innovative and technology-based learning approaches can improve children's interest, imagination, and creative thinking skills as a whole. The use of AR in learning provides an immersive visual experience, stimulates children's imagination, and increases enthusiasm for learning. According to Puspawati (2022), AR technology is effective in developing children's creativity, sparking their imagination, and encouraging flexible thinking through attractive visual media. In addition, Nasution (2022) states that the use of AR media not only attracts children's attention but also increases teachers' understanding of the application of technology in learning.

Thus, it can be concluded that enhancing creativity in early childhood through picture pattern development activities requires consistent guidance and the use of appropriate technology, such as AR, to create a learning environment that supports children's exploration and self-expression in an optimal manner. The role of teachers as facilitators of creative learning is very important, especially in creating a classroom atmosphere and developing learning strategies that support exploration and provide constructive guidance and appreciation in order to increase children's motivation to learn.

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